

I. Species Election

The Office Action acknowledges applicants' species election, but then states that "the election has been treated as an election without traverse." Applicants disagree. First, applicants' responded to the initial Restriction Requirement by an amendment mailed on November 13, 2001. The amendment specifically stated that "Applicants elect with traverse product claims 82-119 of Examiner's Group II for prosecution." Applicants then provided reasons, beginning on page 4 of applicants' response, as to why applicants believed imposition of the requirement for restriction to be improper.

Thereafter, Examiner Vargot instituted a species election. Applicants again responded, specifically stating that "Applicants hereby elect with traverse the embodiment designated as Species B by the Examiner." Applicants clearly stated that their election was traverse, clearly provided reasons as to why the initial requirement for restriction was improper, and therefore disagree with the conclusion stated by the Office Action that applicants' response to the requirement of restriction was made without traverse.

Moreover, applicants assert that claims 82-92 and 96-119 should not be withdrawn from consideration from the present application. These claims are within applicants' initial election as made in their response to the requirement for restriction, and applicants' species election did not change the claims that are being considered in the present application.

II. Rejection of Claims for Obviousness

The Office Action rejects claims 93-95 as allegedly being obvious under 35 U.S.C. § 103(a) over Wold in view of Radcliffe. Applicants respectfully disagree, traverse this rejection and request that it be withdrawn.

Independent claim 93 recites a cellulosic and thermoplastic composite that includes a first and a second surface with cellulosic fines adjacent the first and second surfaces, longer cellulosic flakes adjacent the cellulosic fines, with such longer cellulosic flakes graduating to shorter flakes at a center portion of the product. Applicants refer to this graduation of flakes as "reverse graduation".

In general, Wold discloses the formation of a reinforced composite material. One embodiment disclosed in Wold is described as a primary product. In forming this product, waste

wood is formed into flakes of cellulosic fibers and combined with plastics and a coupling agent. The mixture is then deposited onto a preformed mold to form a mat. The mat is then subjected to heat and pressure to cause the plastic to migrate throughout the fibers.

Other primary products disclosed by Wold include a product produced by combining three mats. In this embodiment the first and third layers are oriented in the same direction while the second and middle layers are oriented at an angle to the first layer, preferably transversely. Wold also discloses forming a three-layer product with the inner second layer being made up of shorter fibers and the first and third outer layers being made up of longer fibers. Thus, Wold discloses a structural primary product with three distinct layers that are pressed together to form a single product. Such products necessarily have boundaries defined by the surfaces of each layer that is used to form the composite. These products tend to fail at the boundaries.

Wold also discloses a secondary product that takes a certain form, but which is not required to exhibit the stringent physical characteristics as a primary product. In Wold's secondary product, fines are combined with plastic to form a mixture. Unsuitable primary product that has been shredded also may be used in the mixture. Thus, the secondary product is formed only of fines combined with plastics or shredded primary product.

Radcliffe generally discloses a surface treatment for wood materials including strand board. The surface treatment of Radcliffe is accomplished in three major steps. These steps include (1) sanding the boards, (2) re-cooking the wood or creating a surface transition region on the exposed wood by subjecting the board to heat and/or pressure, and (3) applying a composition that includes isocyanate constituents. The isocyanate composition may include, amongst other things, wood fines. The surface treatment does not make use of thermoplastic materials. Furthermore, the polymeric coating is mechanically and chemically bound to the oriented strand board material.

If the Examiner believes Applicants' description of Wold or Radcliffe is inaccurate or incomplete, Applicants request that the Examiner provide a specific citation to contrary description in Wold or Radcliffe.

Independent claim 93 is not obvious over Wold in view of Radcliffe. Wold does not disclose a cellulosic and thermoplastic composite that includes a first and a second surface with cellulosic fines adjacent the first and second surfaces. Wold also does not disclose reverse

graduation of flakes within a thermoplastic cellulosic composite. Radcliffe does not remedy the deficiencies of Wold.

First, with reference to the use of cellulosic fines, Wold discloses the formation of a primary product containing various sizes of larger flakes and the formation of a secondary product utilizing fines or primary product that had been shredded. Wold defines a secondary product at column 15 lines 45-53 as "a product which must take a certain form, but which is not required to exhibit the stringent physical characteristics as a primary product such as, in the case of a pallet, the ability to be molded in deep drawn shapes and to withstand specific high stress." Thus, Wold discloses two products, a primary product that exhibits high strength and is comprised of larger flakes and a second product that is not required to exhibit the same strength as a primary product. Wold does not disclose a composite that includes a first and a second surface with cellulosic fines adjacent the first and second surfaces, but rather emphasizes the different applications of fines and other flakes for separate and distinct products. To support this conclusion, applicants note that Wold teaches separating flakes into groups of substantially the same size, and then forming individual cellulosic layers using these previously sized and classified cellulosic materials. Wold does not disclose an apparatus or method for recombining these sorted flakes to provide a unitary product, or a single-layer of a multi-layer product, having reverse graduated cellulosic flakes within the single layer or in the unitary product. Given this emphasis, it would not have been obvious to provide a cellulosic and thermoplastic composite that includes a first and a second surface with cellulosic fines adjacent the first and second surfaces, as recited in applicants' independent claim 93.

Radcliffe does not remedy the deficiencies of Wold with respect to the use of fines in a cellulosic/waste thermoplastic article. First, Radcliffe is not directed to using waste thermoplastic materials to make cellulosic composites. Applicants have amended claim 93 to more specifically recite this distinction.

And, while Radcliffe discloses the application of a layer containing fines to seal wood, Radcliffe is not instructive on applying a layer containing fines to a cellulosic and waste thermoplastic composite. As noted in the attached exhibit, a Rule 132 Declaration by Stanley B. Schroeder, an employee of Lilly Industries, Inc., typical techniques useful for applying paint or other coatings to wood are not instructive in applying layers containing fines to thermoplastic composites; the techniques of coating thermoplastics are materially different. Thus Radcliffe

fails to cure the deficiencies of Wold because such techniques are not applicable to the claimed subject matter and therefore are not obvious. Accordingly, Wold and Radcliffe do not teach, suggest, or provide any motivation for the product embodiments recited in claim 93, and claim 93 and dependent claims 94-95 are properly allowable over Wold and Radcliffe taken alone or in combination.

Wold also does not teach or suggest reverse graduation of cellulosic flakes within a single layer of a composite product, or in the layer of a unitary cellulosic-waste thermoplastic product. Wold is not only silent as to graduation of the fibers, Wold teaches away from such graduation within the individual layers. Wold discloses the classification of the flakes according to length (see Col. 7 lines 61-66). The classified lengths are then diverted to separate storage bins according to flake size (see Col. 8 lines 6-10). After the flakes have been classified, the flakes are then mixed with a predetermined amount of plastic in a drum type mixer (see Col. 9 lines 24-29, 66-68). Thus, while Wold teaches orientation of the flakes in preferred directions, Wold is silent as to graduation. Moreover, Wold fails to teach or suggest any method by which such graduation can be achieved within a single layer.

Radcliffe fails to cure the deficiencies of Wold with respect to graduation of flakes. Radcliffe is directed to formation of a surface treatment for wood materials including oriented strand board and is silent as to the graduation of the cellulosic composite areas. Furthermore, such graduation would not have been obvious in view of Radcliffe given the differences between thermoplastic/cellulosic composites and oriented strand board.

As previously discussed, Wold does not disclose graduation from longer flakes adjacent the first and second surfaces to shorter flakes at an intermediate location between the first and second surfaces, nor would such graduation have been obvious. Radcliffe fails to cure Wold's deficiencies with respect to graduation.

For the reasons stated above, independent claim 93 is non-obvious in view of Wold and/or Radcliffe, taken alone or in combination.

The remaining rejected dependent claims depend from independent claim 93, and are nonobvious in view of the cited references for the reasons stated for independent claim 93, and further in view of the patentable combination of features recited in these dependent claims.

III. New Claims 168-175

Newly added independent claim 168 is properly allowable over Wold and Radcliffe taken alone or in combination. Wold does not disclose graduation of the flakes, nor would such graduation have been obvious. Radcliffe does not remedy Wolds' deficiencies.

Newly added claim 168 discloses a cellulosic and thermoplastic composite including a first and a second surface, the composite having longer flakes adjacent the first and second surfaces; and the flakes of the composite graduating from the longer flakes adjacent the first and second surfaces to shorter flakes at an intermediate location between the first and second surfaces.

Wold is not only silent as to graduation of the fibers, Wold teaches away from such graduation within the individual layers, as discussed above. Thus, it would not have been obvious at the time of the invention to graduate the flakes. Radcliffe fails to cure the deficiencies of Wold. Radcliffe is directed to formation of a surface treatment for wood materials including oriented strand board and is silent as to the graduation of the cellulosic composite areas. Furthermore, such graduation would not have been obvious in view of Radcliffe given the differences between thermoplastic/cellulosic composites and oriented strand board.

Accordingly, Wold and Radcliffe do not teach, suggest, or provide any motivation for the product recited in claim 168. Claim 168 and dependent claims 169-175 are properly allowable over Wold and Radcliffe taken alone or in any combination.

CONCLUSION

The pending claims are in condition for allowance, and such action is respectfully requested.

Respectfully submitted,

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Marked-up Version of Amended Claims Pursuant to 37 C.F.R. §§ 1.121(b)-(c)

93. (Twice Amended) A cellulosic and waste thermoplastic composite, comprising a first surface and a second surface, the composite having cellulosic fines adjacent the first and second surfaces, longer flakes adjacent the cellulosic fines and graduating to shorter flakes at a center portion of the product.

--168. (New) A cellulosic and thermoplastic composite, comprising a first and a second surface, the composite having longer cellulosic flakes adjacent the first and second surfaces, with cellulosic flakes of the composite graduating from the longer flakes adjacent the first and second surfaces to shorter flakes at an intermediate location between the first and second surfaces.

169. (New) The product according to claim 168 wherein the shorter flakes and the longer flakes range from about 3/16 inch to about 3 inches in length.

170. (New) The product according to claim 168 wherein the shorter flakes and the longer flakes range from about 3/16 inch to about 1 ½ inches in length.

171. (New) The product according to claim 168 wherein the longer and the shorter flakes are randomly oriented.

172. (New) The product according to claim 171 wherein the longer and shorter flakes have an aspect ratio from about 2:1 to about 8:1.

173. (New) The product according to claim 171 wherein the longer and shorter flakes have an aspect ratio from about 2:1 to about 6:1.

174. (New) The product according to claim 168 wherein the longer and the shorter flakes are preferentially oriented in at least one direction.

175. (New) The product according to claim 174 wherein the aspect ratio of the largest flakes is from about 16:1 to about 20:1.--